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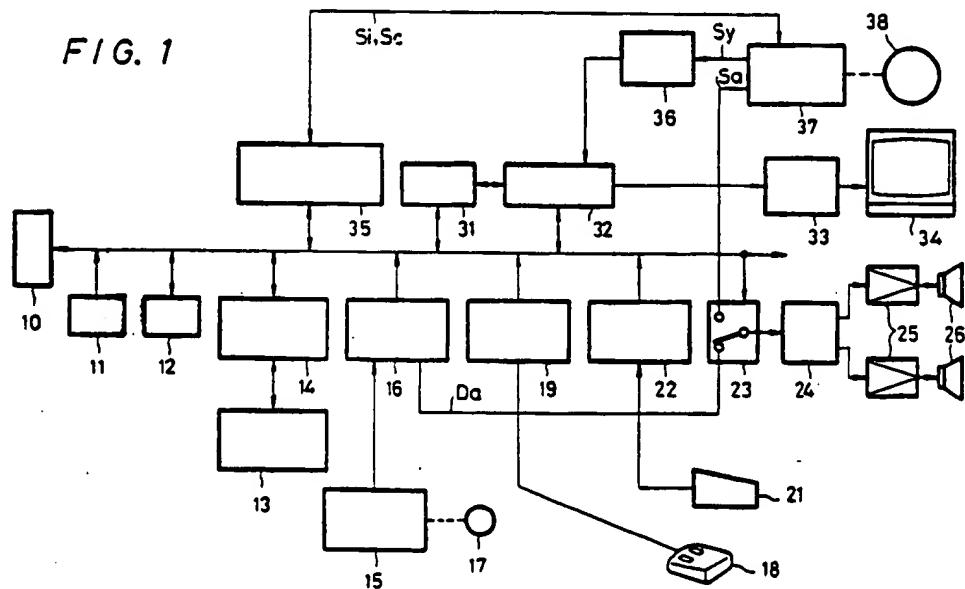
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54 An information searching system for image data.

⑦ An information searching system for image data arranged such that a character or symbol is utilised as a key word for a still picture or real moving picture in order to look up and display a still picture

or real moving picture associated with a piece of music on the basis of, for example, a musical title of the music.

FIG. 1



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AN INFORMATION SEARCHING SYSTEM FOR IMAGE DATA

The present invention generally relates to an information searching system and, more particularly, to an information searching system for image data in which characters and symbols are utilised as key words of a still picture and a real moving picture, whereby a still picture and a real moving picture associated with a piece of music can be displayed from, for example, a musical title.

In the case of still picture and sound, if the still picture video signal and the audio signal thereof are converted into the form of digital signals, it is feasible to store the digitised data in a CD-ROM (ie. compact-disc read only memory) or on a hard disc from which they can be read out when necessary. However, in the case of a real moving picture, the amount of information which needs to be stored, if simply digitised, is very large and it is therefore very difficult to arrange a system in which data of a real moving picture can be stored in a computer and retrieved. For this reason, the data of a real moving picture must be stored in and read out from high capacity external storage medium such as a laser disc, a video tape or the like which has much longer access times than a CD-ROM or hard disc.

It is an object of the present invention to provide an improved information searching system for image data in which the aforementioned shortcomings and disadvantages of the prior art can be reduced or eliminated.

More specifically, it is an object of the present invention to provide an information searching system for image data in which video images of a desired real moving picture and still picture can be searched and obtained by using a character or a symbol as a key word.

According to a first aspect of the present invention, there is provided an information searching system for image data comprising:

- a) a real moving picture reproducing apparatus for reproducing real moving picture information and audio information from real moving picture record medium;
- b) a still picture reproducing apparatus for reproducing audio information and still picture information from a still picture record medium in which list information, audio information and still picture information corresponding to one portion of said list information are recorded;
- c) a display apparatus for displaying an index mark adapted to be used to access audio information and video image information from said real moving picture record medium and said still picture record medium in response to a desired item of said list information; and

d) a selective control apparatus for selecting said index mark on a display screen of said display apparatus to access the selected information, wherein information corresponding to said index mark is displayed as one portion of said list information, and information corresponding to said real moving picture information is also recorded on said still picture record medium.

According to a second aspect of the present invention, there is provided an information search system for image data comprising:

- 1) a real moving picture reproducing apparatus for reproducing real moving picture information and audio information from a real moving picture record medium in which real moving picture information and audio information corresponding to said real moving picture information are recorded;
- 2) a still picture reproducing apparatus for reproducing audio information and still picture information from a still picture record medium in which list information, audio information corresponding to one portion of said list information and still picture information are recorded;
- 3) a display apparatus for displaying an index mark adapted to be used to access audio information and video image information from said real moving picture record medium and said still picture record medium in response to a desired item of said list information; and
- 4) a control apparatus for searching said audio information and said moving and still picture information on the basis of said list information, wherein said control apparatus includes means for obtaining an input search item, means for looking up a table on the basis of said search item, means for converting said list information into a display signal on the basis of said table, means for displaying list information in response to said display signal, means for selecting an item from said displayed list information, means for detecting whether or not said displayed list information is selected, and means for searching said real moving picture information, said still picture information and said audio information on the basis of the detecting done by said detecting means.

The invention will be further described by way of non-limitative example with reference to the accompanying drawings, in which:-

Figure 1 is a block diagram showing an embodiment of an 15 information searching system for image data according to the present invention;
Figure 2 is a flow chart to which reference will

be made in explaining the operation of the illustrated embodiment of the present invention; Figures 3A to 3E are schematic diagrams of tables used in the illustrated embodiment of the present invention, and to which reference will be made in explaining the operation of the embodiment, respectively; and Figures 4A to 4C are schematic diagrams showing examples of pictures displayed on a display screen of a display 25 apparatus used in the illustrated embodiment of the present invention, and to which reference will be made in explaining the operation of the embodiment.

An embodiment of an information searching system for image according to the present invention will now be described with reference to the accompanying drawings.

In this embodiment, data to be searched are, for example, an album title of a compact disc (CD), a singer name and a musical title of music recorded in the CD, and the aforesaid data are written in a CD-ROM. Further, in this embodiment, media in which a real moving picture is stored and an apparatus for reproducing such media are a laser disc and a laser disc player, respectively.

Figure 1 shows the overall arrangement of the information searching system for images. In figure 1, reference numeral 10 designates a central processing unit (CPU), 11 a read only memory (ROM) in which various programs are written, 12 a random access memory (RAM) for a work area, 13 a hard disc apparatus and 14 a hard disc controller. The hard disc apparatus 13 has stored therein an image searching routine 40, such as shown in the flow chart of figure 2.

Reference numeral 15 designates a CD-ROM player, 16 a CD-ROM interface made according to, for example, the small computer system interface (SCSI) standard, 17 a CD-ROM (or CDI), 18 a mouse and 19 a mouse interface, respectively.

In this case, data is read out (ie, reproduced) from the CD-ROM 17 via the CD-ROM player 15 and the CD-ROM interface 16. In the CD-ROM 17, data table NART, ALBM, TITL, NAST, ALST (described more fully later) and so on shown in, for example, figure 3 are written as list information. Further, in the CD-ROM 17, there are written digital audio data Da of some music and digital video data Ds which provide still images of jackets.

The number of music pieces and jackets recorded in the CD, as the digital audio data Da and the digital image data Ds, is determined by the storage capacity (eg, 540 megabytes at maximum) of the CD-ROM 17. Accordingly, the corresponding data Da and Ds are not always recorded for all music data recorded in the CD-ROM 17.

In figure 1, reference numeral 21 designates a full keyboard, 22 a keyboard interface, 24 a digital-

to-analog (D/A) converter, 25 stereo amplifiers, and 26 speakers. During a predetermined mode, the audio data Da from the CD-ROM 17 is supplied through a switch circuit 23 to the D/A converter 24.

Further, in figure 1, reference numeral 31 designates a random access memory (RAM) for storing an image, 32 a cathode ray tube (CRT) controller, 33 a D/A converter, 35 a display apparatus such as a CRT display, 36 a communication circuit made according, for example, to the RS-232C standard, 38 an analog-to-digital (A/D) converter, 37 a laser disc player and 38 a laser disc.

The CRT controller 32 controls various kinds of image data to perform a predetermined display. That is, in a predetermined mode, data stored in the RAM 31 is read out therefrom as a digital video signal under the control of the CRT controller 32. Then, this read-out digital video signal is converted into an analog video signal by the D/A converter 33 and is then supplied to display apparatus 34, thereby being displayed as an image.

The laser disc player 37 is set in a predetermined mode, such as, playback mode, stop mode and so on in response to a control signal Sc from the communication circuit 35. Also, the laser disc player 37 can reproduce a video signal Sy and a digital audio signal Sa of a picture corresponding to an index number from the laser disc 38 in accordance with an index signal (ie, address signal) Si from the communication circuit 35.

This video signal Sy is supplied through the A/D converter 36 to the CRT controller 32 so that, in a predetermined mode, this video signal Sy is supplied from the CRT controller 32 through the D/A converter 33 to the display apparatus 34. During the predetermined mode, the digital audio signal Sa, reproduced by the laser disc player 37, is supplied through the switch circuit 23 to the D/A converter 24.

The table NART to ALST will be described next with reference to figures 3A to 3E.

The table NART is a singer name table in which names Ni of singers (or players) and singer codes ni assigned to the singers are stored. As shown in figure 3A, for example, "123" is assigned to a singer "Marina Watanabe" as the singer code ni.

As shown in figure 3B, the table ALBM is an album name table in which there are stored album names (names of CD albums) Aj, CD numbers Cj of the albums, data of album release Bj and album codes aj assigned to the albums. For example, the CD number and data of release of the album "MARINA" are "32.8H105" and "February 26 1987" and "234" is assigned to this album "MARINA" as the album code aj.

As shown in figure 3C, the table TITL is a musical title table in which there are stored musical

titles Tk and music codes tk assigned to the music pieces. For example, as shown in figure 3C, "3456" is assigned to music "HOLIDAY VISITOR" as the music code tk.

As shown in figure 3D, the table NAST is a singer searching table prepared for each of the singers, and in which there are stored album codes aj of albums Aj and jacket addresses Jj made by the singer Ni. In the example of figure 3D, the table NAST is the table NAST (ni = 123) in which the singer is "Marina Watanabe" whose singer code is ni = 123.

In this table NAST, when Jj ≠ 0, the digital image data Ds of the still picture of the jacket of the album Aj to which the code aj is assigned is recorded in the CD-ROM 17 and this means that the address thereof is Tj. When Tj = 0, this means that such digital image data Ds is not recorded in the CD-ROM 17.

Further, as shown in figure 3E, the table ALST is an album searching table prepared for each of the albums. More precisely, in this table ALST, there are stored musical title code tk, address Sk of the digital audio data Da and address Vk of the video signal Sy of the music Tk recorded in the album Aj. The example of figure 3E illustrates the table ALST (aj = 234) of the album "MARINA" where aj = 234.

In this table ALST, when Sk ≠ 0, the digital audio data Da of the music Tk to which the code tk is assigned is recorded in the CD-ROM 17, and this means that the address is Sk. When Sk = 0, this means that the above mentioned digital audio data Da is not recorded in the CD-ROM 17. This is also true for the address Vk. When Vk ≠ 0, the video signal Sy and the digital audio signal Sa of the music Tk to which the code tk is assigned are recorded on the laser disc 38 and this means that the address thereof is Vk. When Vk = 0, this means that the video signal Sy and the digital audio signal Sa are not recorded on the laser disc 38 at all.

Although various kinds of tables necessary for searching are recorded in the CD-ROM 17 in addition to the aforementioned tables NART to ALST, these will not be described herein. Further, the storage requirements of these tables NAST to ALST amount to about 1% of the whole storage capacity of the CD-ROM 17, considering the data amount of these tables of one record company.

Accordingly, substantially the whole storage capacity of the CD-ROM 17 can be assigned to the digital audio data Da of music Tk or to the digital image data Ds of the still picture on the CD jackets. The ratio in which the capacity of the CD-ROM 17 is assigned to the digital audio data Da and the digital image data Ds can be determined freely.

Music pieces recorded in the laser disc 38 are

selected in response to the contents of the CD-ROM 17, or the address Vk of the CD-ROM 17 is determined in response to music pieces recorded in the laser disc 38. For this reason, unavoidably, the contents of the laser disc 38 tend to include some special cases. In such case, the laser disc 38 may be formed as a write-once type disc (ie, WO-type disc).

5 Data is searched by executing the routine 40 by the CPU 10 as follows. In the following description, the search field is "singer name" and the key word to be looked up is "Marina Watanabe".

10 Referring to figure 2, the processing by the CPU 10 is started from step 41 in the routine 40. In the next step 42, the tables NART to ALST stored in the CD-ROM 17 are read out therefrom and transferred to the RAM 12. In the next step 43, data of an initial picture is written in the RAM 31 and this data is read out from the RAM 31 as a video signal by the CRT controller 32. This video signal is supplied through the D/A converter 33 to the display apparatus 34 so that the initial picture is displayed on the display apparatus 34.

15 On the initial picture, there exist item names to be searched such as "singer name", "album name" and the like. In step 43, the CPU 10 is placed in the standby mode for awaiting commands indicating the search item.

20 25 When an icon (not shown) of "singer name" is clicked by the mouse 18 as the search item, the processing proceeds from step 43 to step 44, and in step 44, the CPU 10 is placed in the standby mode to await the input of a key word. Under this condition, if "Marina Watanabe" is inputted as the key word by the keyboard 21, then the processing proceeds from step 44 to step 45.

25 30 In step 45, the following table processing is carried out by the CPU 10.

35 By referencing to the table NART, the key word, "Marina Watanabe" is converted into the singer code ni, in that case, ni = 123.

40 Then, of the tables NAST, table NAST (ni = 123) of the code ni = 123 is selected, and the first album code aj = 234 is accessed from the album codes aj of this table NAST.

45 50 Then, the user looks up the table ALBM by utilising the album code aj = 234, and album name Aj, in that case, album name "MARINA" is accessed.

55 At that time, CD number Cj and album release data Bj, in that case, "32.8H105" and "Feb 26, 1987" are accessed from the table ALBM together with album name Aj and address Jj corresponding to the code (aj = 234) is accessed from the table NAST (ni = 123).

Further, a table ALST (aj = 234) is selected from the tables ALST by the code aj and the user looks up the table TITL by utilising the song name

code tk registered in this table ALST (aj = 234). Then, the song name code tk registered in the table ALST (aj = 234) is converted to song name Tk and delivered.

Furthermore, at that time, addresses Sk and Vk are generated at every song name code tk (ie, at every song name code tk because the code tk corresponds to the song name Tk in a one-to-one relation on the basis of the table TITL) on the basis of the table ALST (aj = 234).

After the aforesaid processing steps are executed, the processing proceeds from step 45 to step 46. In step 46, display data is formed in accordance with the data thus derived at step 45 and is then fed to the RAM 31.

Therefore, in accordance with the data generated in step 45, the display apparatus 34 displays thereon CD number and album release date of the album "MARINA" by "MARINA WATANABE" and musical titles of music pieces recorded in this album in the form of a list information display as shown in, for example, figure 4A.

At that very moment, an index mark Mi is simultaneously displayed in accordance with the addresses Jj, Sk and Vk generated at step 45. That is, when Jj ≠ 0, the still picture video image data Ds of the CD jacket is recorded in the address Jj of the CD-ROM 17 so that, as shown in figure 4A, word "JACKET" is displayed on one portion of the display screen as the index mark Mi in order to indicate that the video image data Ds is recorded. When Jj = 0, "JACKET" is not displayed on the picture screen at all. Further, when Sk ≠ 0, digital audio data Da of the corresponding music is recorded on the address Sk of the CD-ROM 17 so that, as shown in figure 4A, a "musical note" mark is displayed, for example, at the starting portion of the musical title of corresponding music as the index mark Mi, in order to indicate the existence of such recorded. When Sk = 0, the "musical note" mark is not displayed thereon at all.

Furthermore, when Vk ≠ 0, the video signal Sy and the audio signal Sa of the corresponding music are recorded on the address Vk of the laser disc 38 so that, as shown in figure 4A, the character "V" is displayed, for example, at the starting portion of the musical title of the corresponding music as the index mark Mi in order to indicate the existence of such recorded. When Vk = 0, no character "V" is displayed.

In the case of figure 4A, there is still picture video image data Ds of the jacket of this album "MARINA", 20 the digital audio data Da is recorded on the CD-ROM 17 for the first music piece "HOLIDAY VISITOR", and the real moving picture and the sound thereof are recorded on the laser disc 38 for the third music piece "NAKED CRAYON". Further, characters or icons Mc such as

"preceding", "next", "again" and "end" are displayed on the lower part of the display screen.

After the above mentioned display is performed, the processing proceeds from step 46 to step 47, and in step 47, the CPU 10 is set in the standby mode to await further user input via the mouse 18. Input by the mouse is accomplished by moving the mouse in the conventional way to move a cursor (not shown) to a selected position on the display screen, after which a push button switch on the mouse is operated or "clicked" to form a selection signal, in response to the current location of the cursor.

Accordingly, when "musical note" mark in the marks Mi is clicked by the mouse 18, the processing proceeds from step 47 to step 50. In step 50, the kind of the character of symbol clicked in step 50 is determined. In case the mark clicked is the "musical note" mark, the processing proceeds from step 50 to step 51.

In step 51, the control signal Sc is supplied through the communication circuit 35 to the laser disc player 37, whereby the laser disc player 37 is set in the stop mode regardless of the previous operation mode. Then, the processing proceeds to the next step 52, and in this step 52, the address Sk corresponding to the music of the "musical note", mark selection is supplied to the CD-ROM player 15 on the basis of the position selected by the mouse 18 in step 47 and the control signals are supplied to the CD-ROM player 14 and the CD-ROM interface 16, whereby the CD-ROM player 15 and the CD-ROM interface 16 are placed in the playback mode for reproducing the digital audio data Da. Thus, the digital audio data Da is generated from the address Sk of the CD-ROM 17 through the CD-ROM interface 16.

The digital audio data Da is supplied through the switch circuit 23 to the D/A converter 24, whereby it is converted to an analog audio signal, that is, an audio signal of music "HOLIDAY VISITOR" corresponding to the "musical note" mark. This analog audio signal is supplied through the amplifiers 25 to the respective speakers 26.

Accordingly, when the displayed condition is as shown in figure 4A, if "musical note" mark of the marks Mi is designated by or selected using the mouse 18, then music of the musical title associated with the "musical note" mark is reproduced from the CD-ROM 17. At that time, the picture of figure 4A is displayed on the display apparatus 34 as shown.

Then, the processing returns to step 47 from step 52 and, the CPU 10 is placed in the standby mode for awaiting the input from the mouse 18. In this standby mode, if the music in the CD-ROM 17 is ended, the CD-ROM player 15 temporarily finishes the reproduction of music at this music piece.

When in step 47 the CPU 10 is set in the standby mode for awaiting the input from the mouse 18, if the "V" mark of the marks Mi is selected by being clicked by the mouse 18, the processing proceeds from step 47 to step 50. In step 50, the kind of character or symbol clicked is identified and in the case the "V" mark is clicked, the processing proceeds from step 50 to step 61.

In step 61, a control signal is supplied to the CD-ROM player 15 and the CD-ROM interface 16, whereby the CD-ROM player 14 and the CD-ROM interface 16 are placed in the mode for stopping the reproduction of the audio data DA regardless of the previous operation mode. Then, the processing proceeds to step 62, and in this step 62, the address Vk corresponding to the music associates with the "V" mark selection is supplied through the communication circuit 35 to the laser disc player 37 as the index signal Si on the basis of the position selected by the mouse 18 in step 47, and the control signal Sc is also supplied to the laser disc player 37, whereby the laser disc player 37 is set in the playback mode. Thus, the video signal Sy and the digital audio signal Sa reproduced from the address Vk of the laser disc 38.

The reproduced video signal Sy is supplied through the signal line of the A/D converter 36, the CRT controller 32 and the D/A controller 33 to the display apparatus 34, whereas the signal Sa reproduced from the laser disc 38 is supplied through the signal line of the switch circuit 23, the D/A converter 24 and the amplifiers 25 to the speakers 26.

Accordingly, when the display condition is as shown in figure 4A, if the "V" mark of the marks Mi is designated by the mouse 18, the real moving picture and the sound of the music of musical title attached with the "V" mark are reproduced from the laser disc 38, whereby the real moving picture is displayed on the picture screen of the display apparatus 34 as, for example, shown in figure 4B and the sound accompanying with the real moving picture is reproduced via the speakers 26.

Then, the processing returns from step 62 to the step 47 in which the CPU 10 is set in the standby mode to await input from the mouse 18. In the input standby mode, if the music on the laser disc 38 is completed, the laser disc player 37 ends the reproduction of music at this 20 music piece for the present and the picture screen of the display apparatus 34 is returned to the condition shown in figure 4A.

Further, when the CPU 10 is set in the standby mode for awaiting the input from the mouse 18 in step 47, if the "JACKET" mark of the marks Mi is clicked by the mouse 18, the 25 processing proceeds from step 47 to step 50. In step 50, the kind of character or symbol thus clicked by the mouse

18 is identified, and in the case the character clicked by the mouse 18 is the "JACKET" mark the processing proceeds from step 50 to step 71.

In step 71, the CRT controller 32 is placed in the display mode of figure 4A regardless of the previous mode of the laser disc player 37. Accordingly, if the real moving picture and the sound are reproduced from the laser disc 38 at the time point of step 71, the display of the real moving picture is interrupted but the output of sound is not interrupted. Similarly, if the sound is reproduced from the CD-ROM 17, the reproduction of that is never interrupted.

Then, the processing proceeds from step 71 to step 72, and in step 72, the address Jj is supplied to the CD-ROM player 15 and the CD-ROM interface 16, whereby the CD-ROM player 15 and the CD-ROM interface 16 are placed in the playback mode for reproducing the still picture digital video image data Ds. Thus, the video image data Ds is generated from the address Jj of the CD-ROM 17 through the CD-ROM interface 16.

The video image data Ds is supplied through the CRT controller 32 to the RAM 31 and the video image data Ds is read out from the RAM 31 by the CRT controller 32, whereby the thus read-out video image data Ds is supplied through the D/A converter 33 to the display apparatus 34.

Accordingly, in the display condition shown in figure 4A, when the "JACKET" mark of the marks Mi is designated or selected by the mouse 18, the still picture image of the CD jacket is displayed on the display screen of the display apparatus 34 as shown in figure 4C. At that time, if the CD-ROM 17 or the laser disc 38 is being reproduced the reproduction of the sound thereof is continuously carried out.

Then, the processing returns from step 72 to step 47 in which the CPU 10 is again set in the standby mode to await input from the mouse 18.

Further, when the CPU is set in the standby mode to await input from the mouse 18 in step 47, if the "next" mark of the marks Mc is clicked by the mouse 18, then the processing proceeds from step 47 to step 50. In step 50, the kind of character or symbol thus clicked by the mouse 18 is identified. In that case, the clicked character is "next" mark so that the processing proceeds from step 50 to step 81.

In step 81, in that case, the table NAST (Ni = 123) is selected from the tables NAST and, of this table, the display for the album of aj = 234 is carried out as shown in figure 4A so that the album code aj is incremented from aj = 234 to the next album code aj = 423. Then, the processing returns from step 81 to the step 47.

Accordingly, with respect to the album of the album code aj = 423, data thereof are displayed in

the form of the list information display similarly to figure 4A, and then, in step 47, the CPU 10 is set in the standby mode to await input from the mouse 18.

When the CPU 10 is set in the standby mode to await input of data by the mouse 18 in step 47, if the "previous" mark of the marks Mc is clicked by the mouse 18, in an opposite manner to the "next" mark, in step 82, the album code aj is decremented from the present album code to the previous album code. Then, the processing returns from step 82 to step 45.

Thereafter, with respect to the album of the immediately-preceding album code aj, data thereof are displayed in the form of the list information display similarly to figure 4A, and then, the CPU 10 is set in the standby mode for awaiting the input from the mouse 18.

Further, when the CPU 10 is set in the standby mode for awaiting the input from the mouse 18 in step 47, if "again" mark of the marks Mc is clicked by the mouse 18, and then the processing proceeds from step 47 to step 50. In step 50, the kind of the thus clicked character or symbol is identified. In that case, the thus clicked character is "again" mark so that the processing proceeds from step 50 to step 83.

In step 83, the content of the RAM 31 is cleared, the display screen of the display apparatus 34 is cleared and then the processing returns to step 43.

Accordingly, thereafter, with respect to another selected singer, the list, the real moving picture or the jacket is displayed and the music thereof is reproduced similarly.

When the CPU 10 is in the standby mode for awaiting the input from the mouse 18 in step 47, if the "end" mark of the marks Mc is clicked by the mouse 18, then the processing proceeds from step 47 through step 50 to step 84 wherein the routine 40 is ended.

As described above, according to this invention, when the list information data of, for example, singer name, album name, musical title and the like are registered in the CD-ROM 17, the digital audio data Da of music of registered musical title can be recorded, the still picture digital video image data Ds of the registered CD jacket can be recorded or the registered musical title and the real moving picture and the sound of the corresponding laser disc can be recorded in correspondence therewith. Thus, when the list information is displayed, the corresponding music can be reproduced from the CD-ROM 17, the still picture of the CD jacket can be displayed or the real moving picture and the sound of the corresponding music can be reproduced from the laser disc. Therefore, the CD-ROM 17 is not only utilised as a data base of text but

also the compact disc and the laser disc can be organically and effectively combined, to thereby be utilised as a highly sophisticated data base.

Further, the CD-ROM 17 can be used by itself,

5 as a standard data base.

The types of the tables NAST to ALST in the foregoing may be similar to those of a standard data base or these types may be such that the apparatus can detect the existence or absence of 10 the corresponding data Da, Ds, Sy and Sa or can detect the addresses Jj, Sk and Vk if the data Da, Ds, Sy and Vk exist.

Alternatively, the digital audio data Da, the digital video image data Ds, the video signal Sy and 15 the digital audio signal Sa may be divided into a plurality of compact discs and laser discs. In that case, the addresses Sk and Vk may include identification codes by which the compact discs and the laser discs can be identified. Further, the data Da and Ds may be copied, for example, onto the hard disc 13 and the copied data Da and Ds may be utilised.

Needless to say, although in the above described embodiment items and commands are selected by the user operating a mouse, any other convenient form of pointing device (eg, a trackball) or user-input device such as a conventional keyboard may be used.

Having described a preferred embodiment of 30 the invention with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment and that various changes and modifications thereof could be effected by one skilled in the art without departing 35 from the scope of the novel concepts of the invention as defined in the appended claims.

Claims

- 40 1. An information searching system for image data comprising:
 - a) a real moving picture reproducing apparatus for reproducing real moving picture information and audio information from real moving picture record medium;
 - 45 b) a still picture reproducing apparatus for reproducing audio information and still picture information from a still picture record medium in which list information, audio information and still picture information corresponding to one portion of said list information are recorded;
 - c) a display apparatus for displaying an index mark adapted to be used to access audio information and video image information from said real moving picture record medium and said still picture record medium in response to a desired item of said list information; and
- 50
- 55

d) a selective control apparatus for selecting said index mark on a display screen of said display apparatus to access the selected information, wherein information corresponding to said index mark is displayed as one portion of said list information, and information corresponding to said real moving picture information is also recorded on said still picture record medium.

2. An information searching system for image data as claimed in claim 1, wherein said selective control apparatus is comprised of a control apparatus for controlling said still picture reproducing apparatus such that said display apparatus reproduces said index mark from said still picture record medium together with said list information, and operating means for selecting said index mark displayed on said display apparatus.

3. An information searching system for image data as claimed in claim 2, wherein said operating means is a mouse and controls the position of a cursor on said display screen so as to select a desired index mark near said cursor.

4. An information searching system for image data as claimed in claim 1, 2 or 3 wherein said still picture reproducing apparatus is a drive for reading a CD-ROM.

5. An information searching system for image data as claimed in claim 1, 2, 3 or 4 wherein said real moving picture reproducing apparatus is a drive for an optical digital disc.

6. An information searching system for image data as claimed in claim 5, wherein said reproducing apparatus is capable of writing to rewritable optical disc.

7. An information searching system for image data as claimed in any one of the preceding claims in combination with a said still picture information medium for said still picture reproducing apparatus having stored thereon a video image of the jacket design of a music record disc.

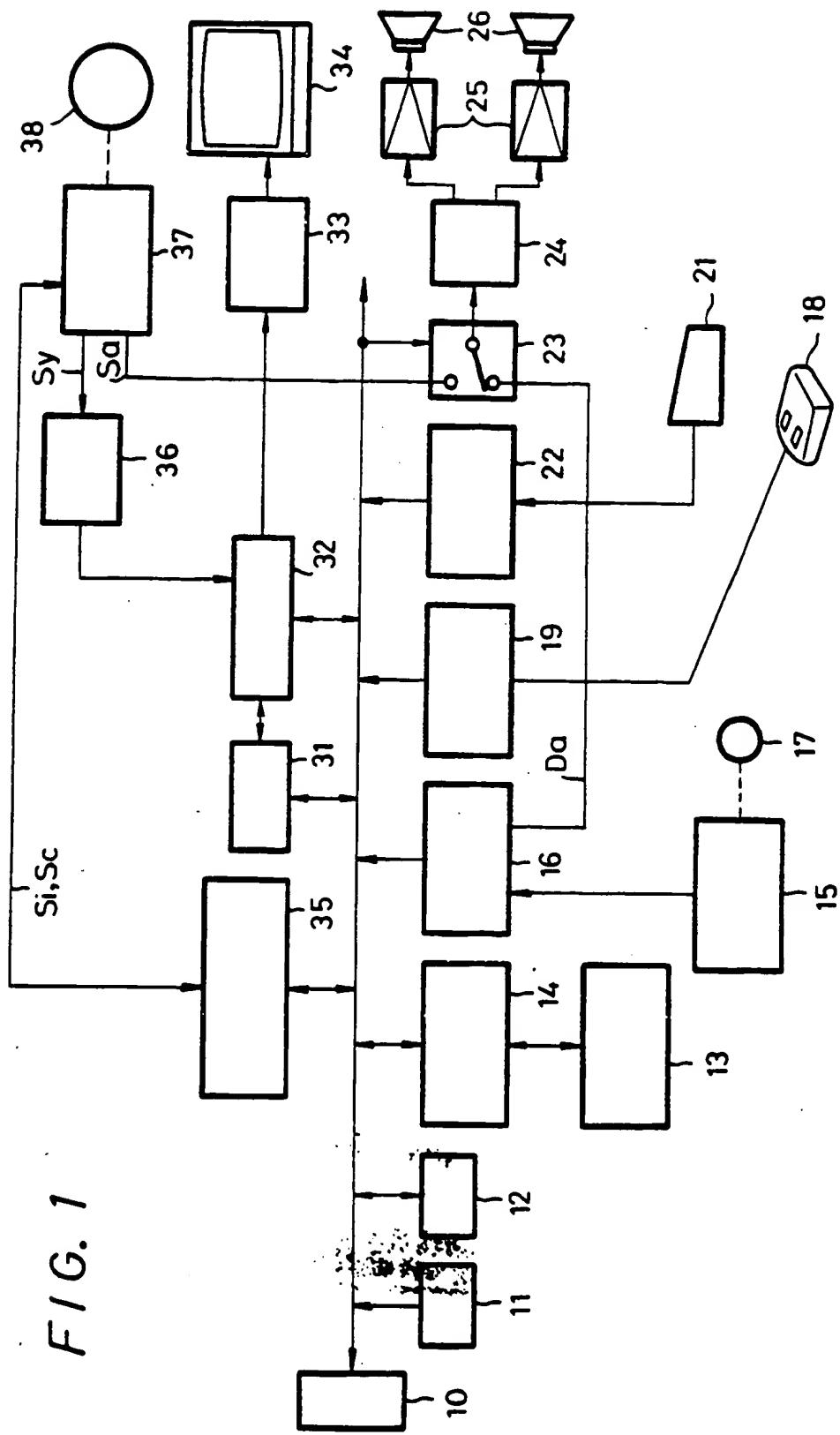
8. An information searching system for image data as claimed in any one of the preceding claims in combination with said real moving picture information medium on which is stored a video image associated with an information stored in said still picture record medium.

9. An information searching system for image data as claimed in any one of the preceding claims, wherein said real moving picture and said still picture are displayed within a window.

10. An information search system for image data comprising:

- 1) a real moving picture reproducing apparatus for reproducing real moving picture information and audio information from a real moving picture record medium in which real moving picture information and audio information corresponding to said real moving picture information are recorded
- 2) a still picture reproducing apparatus for reproducing audio information and still picture information from a still picture record medium in which list information, audio information corresponding to one portion of said list information and still picture information are recorded;
- 3) a display apparatus for displaying an index mark adapted to be used to access audio information and video image information from said real moving picture record medium and said still picture record medium in response to a desired item of said list information; and
- 4) a control apparatus for searching said audio information and said moving and still picture information on the basis of said list information, wherein said control apparatus includes means for obtaining an input search item, means for looking up a table on the basis of said search item, means for converting said list information into a display signal on the basis of said table, means for displaying list information in response to said display signal, means for selecting an item from said displayed list information, means for detecting whether or not said displayed list information is selected, and means for searching said real moving picture information, said still picture information and said audio information on the basis of the detecting done by said detecting means.

FIG. 1



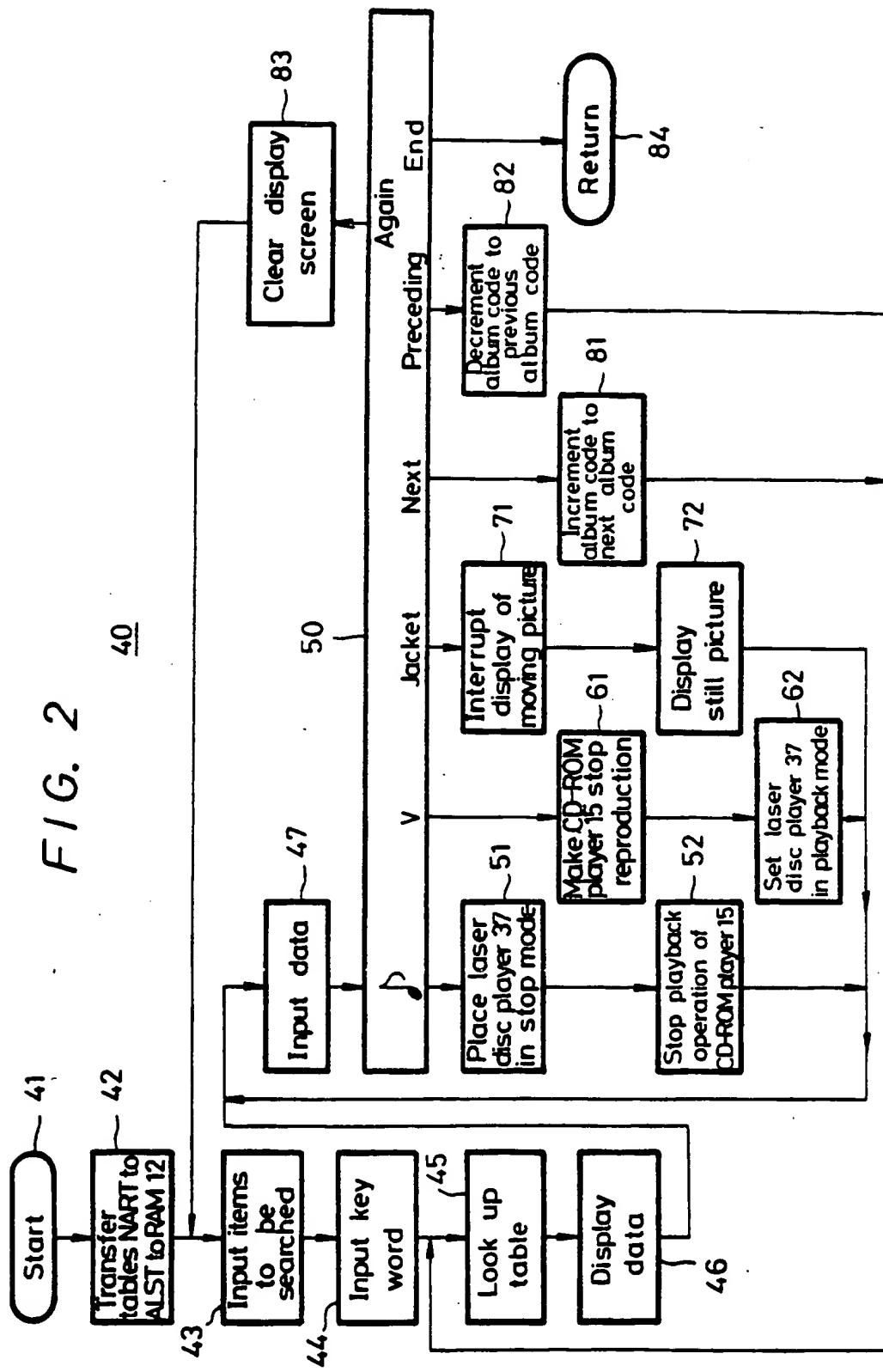


FIG. 3A

Singer Name	Table	NART
Singer Name	Singer Code	Name ni
N ₁		1
N ₂		2
N ₃		3
MARINA WATANABE	1 2 3	
MISATO WATANABE	1 2 4	

FIG. 3B

Album Name	Table	AL BM			
Album Name	CD Number	Cj	Album Release Date Bj	Album Code	aj
A ₁		C ₁	B ₁	1	
A ₂		C ₂	B ₂	2	
A ₃		C ₃	B ₃	3	
MARINA	32. 8H105		Feb.26, 1987	2 3 4	

FIG. 3C

Musical Title	Table	TITLE
Musical Title	Musical Code	tk
T ₁		1
T ₂		2
T ₃		3
HOLIDAY	VISITOR	3 4 5 6

FIG. 3D

Singer Searching Table NAST
(Table of n_i = 123)

Album Code	a _j	Jacket Address	J _j
	2 3 4		J ₁
	4 2 3		J ₂
	5 6 7		J ₃

FIG. 3E

Album Searching Table ALST
(Table of $aj=123$)

Musical Code	Title tk	Address of Digital Audio Data Sk	Address V of Real Moving Picture V _k
3 4 5 6		S ₁	V ₁
3 4 5 7		S ₂	V ₂
3 4 5 8		S ₃	V ₃

FIG. 4A

<p style="text-align: right;">Mi</p> <p>Jacket</p>			
32·8 H105		Feb. 26, 1987	
M A R I N A			
<p>(1) HOLIDAY VISITOR</p> <p>(2) MESSAGE FROM WHITE RABBIT</p> <p>(3) NAKED CRAYON</p> <p>.....</p> <p>(12) SEE YOU</p>			
Next	Preceding	Again	End
<p>Mc</p>			

FIG. 4B

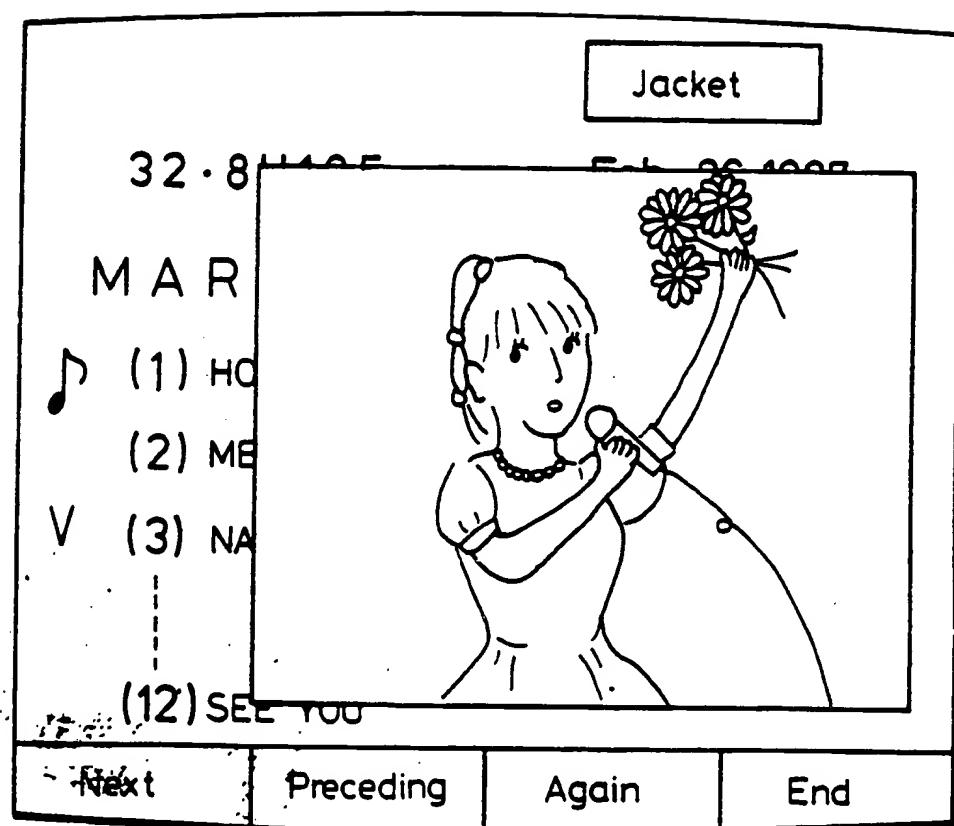
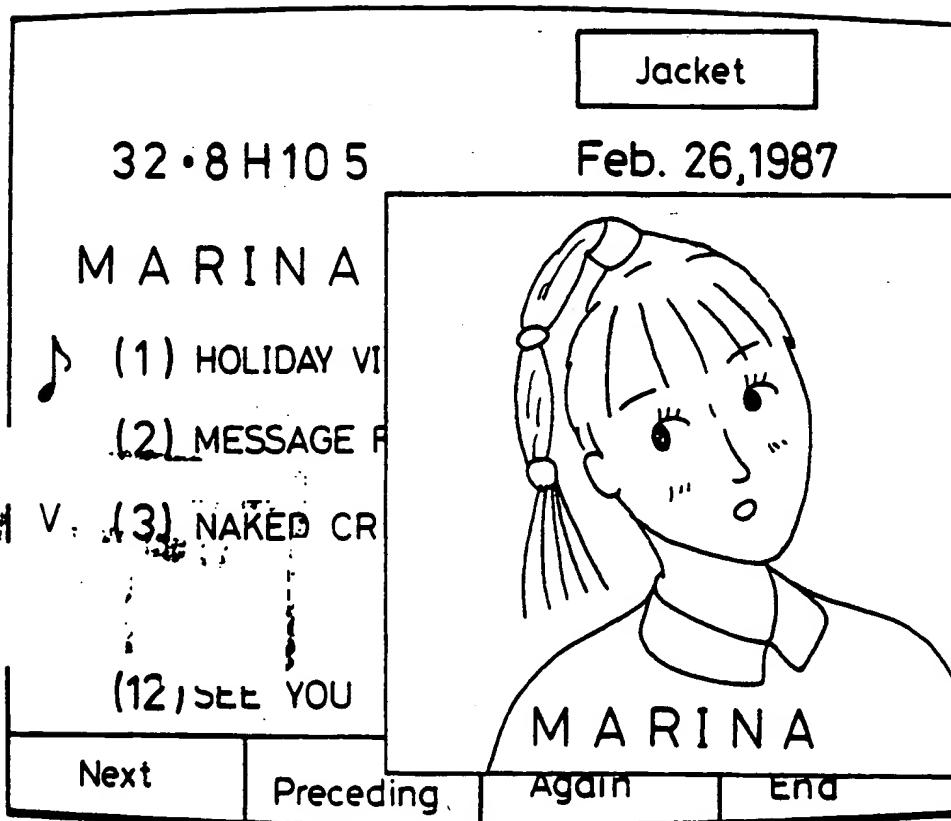


FIG. 4C





DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	IEEE SPECTRUM, vol. 23, no. 4, April 1986, pages 49-54, New York, US; T. OREN et al.: "The compact disk ROM: applications software" " Page 51, right-hand column, lines 7-21 "	1,2,4,5,8, 10	G 11 B 27/10 G 11 B 27/11 G 11 B 27/34
A	GB-A-2 208 142 (HASHIMOTO CORP.) " Abstract; page 5, line 27 - page 12, line 24; claims 1-5 "	1-3,8,10	
A	FUNKSCHAU, vol. 60, no. 18, 26th August 1988, pages 36-39, Munich, DE; P. KAISER: "Interaktive CD, Faszination Compact Disc" " Page 36, left-hand column, line 12 from the bottom of the page - middle column, line 12 "	1-4,9,10	
A	FERNSEH- UND KINO TECHNIK, vol. 39, no. 8, August 1985, pages 377-383, Berlin, DE; K. RÖSSEL: "Ineraktives Video" " Page 382, left-hand column, line 13 - page 382, middle column, line 6 "	1-5,8,10	
A	FR-A-2 623 930 (SOULODRE et al.) " Page 2, lines 12-35; page 3, line 22 - page 5, line 24 "	1,2,4,5,8, 10	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	PATENT ABSTRACTS OF JAPAN, vol. 9, no. 295 (E-360)[2018], 21st November 1985; & JP-A-60 134 679 (MATSUSHITA DENKI SANGYO K.K.) 17-07-1985 " Whole document "	1,2,5,8,10	G 11 B G 07 F
A	GB-A-2 168 191 (MICRODATADISC LTD) " Whole document "	1,2,5,8,10	

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	05 June 91	DAALMANS F.J.

CATEGORY OF CITED DOCUMENTS

- X: particularly relevant if taken alone
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L: document cited for other reasons

S: member of the same patent family, corresponding document